



**UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/971,344	11/17/97	GOELET	P 04990,0008-2

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EXAMINER

SISSON, B

ART UNIT

PAPER NUMBER

1655

SI

DATE MAILED:

11/17/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/971,344

Applicant(s)

GOELET ET AL.

Examiner

Bradley L. Sisson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2000.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54-126 is/are pending in the application.
- 4a) Of the above claim(s) 54-93 and 113-126 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 94-112 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 37 38 43.
- 18) ☒ Interview Summary (PTO-413) Paper No(s). 50 + 47
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group V in Paper No. 49 is acknowledged. The traversal is on the ground(s) that the searches would be substantively similar and as such would not pose a burden upon the examiner. This is not found persuasive because the claims are drawn to a number of different methods that are each comprised of different method steps and result in different end products. Searches and examination of such claims would raise a variety of different issues under enablement as well as requiring different searches that are more carefully tailored to the exacting requirements of the different methods.

The requirement is still deemed proper and is therefore made FINAL.

2. This application contains claims 54-93 and 13-126 drawn to an invention nonelected with traverse in Paper No. 49. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

3. The drawings remain objected to for reasons of record; see the PTO-948 that was attached to Paper No. 14 in Parent Application 08/216,538. Acknowledgement is made of applicant's willingness to file corrected drawings upon notification of allowable subject matter.

Specification

4. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

5. The attempt to incorporate subject matter into this application by reference to abandoned US Patent Application 08/005,061, as found at page 25 of the subject application, is improper because said application is disclosed as teaching the "most preferred" method of preparing the nucleic acid for the assay.

Claim Objections

6. Claims 107-112 are objected to because of the following informalities: They depend from claims that are in turn drawn to non-elected inventions. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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8. Claims 105-107, 109 and 112 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Upon review of the specification, support for correlating a SNP or set thereof, with a genetic trait has been found, as has support for the application of this to animals and plants generally. Specific reference to types of animals has been found at page 13, penultimate paragraph. The specification, however, has not been found to contain any reference to correlating the genetic trait to the response of an "individual" to any drug, much less an adverse drug reaction (claims 105 and 107, respectively), nor has support for "fungi, yeast, and *C. elegans*" been found (claim 107), nor has support for "rat and rabbit" or "corn, wheat, soy, peas, and rice" been found (claims 109 and 112, respectively).

9. During the telephonic interview of 26 October 2000, Mr. Abrams indicated that in light of the decision of *Union Oil of California v. Atlantic Richfield Co.* (CAFC, March 2000) 54 USPQ2d 1227, support for these specific embodiments were considered to be supported by the general disclosure of "plants" and "animals."

10. Applicant's argument has been fully considered and has not been found persuasive. The recitation of "plants", "animals", and "traits" in the specification is not considered to be analogous to the fact pattern in *Unocal*. In *Unocal* the jury found that while the specification did not teach in exacting terms the exact proportions of all possible combination of components of gasoline mixtures, the specification did reasonably teach "that changes in the proportion of different hydrocarbon-containing streams to produce gasoline with specific properties reduces the amount of NOx, CO, and hydrocarbons emitted from an automobile engine" (*Ibid*, 1232-

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1233). In contrast, the claimed method is drawn to a method of associating single nucleotide polymorphisms to genetic traits where the reaction conditions are open-ended and where the starting material can be from conceptually any source. The specification is wholly silent as to applicant having contemplated applying this method to any genus of plant^t_λ much less to any species thereof. While the specification has been found to point to applying this method to the analysis of specific animals, e.g., humans, dogs, cats, horses, cattle, and sheep, the specification does not address the application of this method to any fungi, yeast, or rodent (mouse, rat, rabbit), much less the application of said method to the analysis of *C. elegans*. BdA

11. While the aspect of rice and wheat is a narrower range within the kingdom of plants, the aspect of all "plants" is considered to be non-analogous to a range of components of a gasoline mixture. While all plants^d_{to} comprise DNA, the complexity of the cells, the manner in which they reproduce, as well as the manner in which they produce energy is subject to variation. Couple this with the innumerable species of plants that exist, and the range of possibilities is profound. Furthermore, the jury in *Unocal* found that the specification taught in sufficient detail that the relationship between mixing various chemicals and desired properties of the resultant gasoline. In contrast, the specification does not teach the correlation of any SNP in any plant to any trait. Furthermore, the specification does not teach the correlation of any SNP to any trait in any animal, much less mice, rats, rabbits, etc. Therefore, and in the absence of convincing evidence to the contrary, the amendment of 13 April 2000 is considered to introduce new matter into the subject application.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 101-112 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Claim 101 recites the limitation "the population of" in step (c). There is insufficient antecedent basis for this limitation in the claim. Claims 102-112, which depend from claim 101, fail to overcome this issue and are similarly rejected.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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17. Claims 94-104 and 107 rejected under 35 U.S.C. 103(a) as being unpatentable over Goelet et al. (WO 92/15712) in view of Beutler (US Patent 5,266,459), Seidman et al. (US Patent 5,429,923) and Ainsworth et al. (*Human Genetics*, (1993) Vol. 91, 15-156).

18. Goelet et al., page 7, third paragraph, discloses that their method overcomes prior art issues in permitting one to type or associate "particular nucleotides." It is noted with particularity that the method disclosed within this publication is the preferred method of the claimed method.

19. Goelet et al., page 8, first full paragraph, teaches that the disclosed method permits analysis of nucleic acid sequences found to "be useful in the diagnosis of infectious diseases, the diagnosis of genetic disorders, and in the identification of individuals and their parentage."

20. Goelet et al., page 12, penultimate paragraph, bridging to page 13, disclose applying the method for the identification of different alleles and that the method provides for the identification of the genotype of an organism at one or more particular genetic loci through the identification of a specific nucleotide at a particular location.

21. Goelet et al., page 27, last paragraph, teaches that the sample nucleic acid can be from any source, natural and artificial. And at page 28 it is taught that exemplary organisms include "plants. Microorganisms, viruses, birds, vertebrates, invertebrates, mammals, human beings, horses, dogs, cows, cats, pigs, or sheep.

22. Goelet et al., starting at page 45, discloses the genetic bit analysis.

23. Goelet et al., do not develop the aspect of the allelic marker having a frequency of from 0.001 and 0.999 nor do they develop in greater detail known single nucleotide polymorphisms that correlate with diseases or traits.

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24. Beutler, columns 1-3, develop in great detail the association of point mutations and Gaucher's disease in humans. Not only are specific point mutations explicitly identified but the aspect of allelic frequency is also developed and described.

25. Seidman et al., columns 1-3, disclose a process for diagnosing a disease caused multiple genes and multiple point mutations. Column 3, first full paragraph, also teaches specifically to applying this diagnostic procedure to determining the likelihood of one having such mutations to actually developing the disease.

26. Ainsworth et al., teaches of the discovery of multiple point mutations, their allelic frequency, and the association of these point mutations in exon 31 of the neurofibromatosis (NF1) gene.

27. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have adapted the methods of Ainsworth et al., Seidman et al., and Beutler with that of Goelet et al., as such would have afforded the ordinary artisan with a reproducible and efficient means for associating single nucleotide point mutations with disease, predisposition to such disease, as well as correlation of traits with such single nucleotide polymorphisms, whether or not these point mutations of SNPs were the causative factor or not for such traits. In view of the body of work that had been previously done in the area of SNP association with various traits, and the explicit teaching of applying such technology to the identification of traits in plants and various animals, the ordinary artisan would have been highly motivated to have developed such a method of developing a genetic map and to have had a reasonable expectation of success in so doing.

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28. For the above reasons, and in the absence of convincing evidence to the contrary, the claims have not been found to be patentable over the prior art of record.

29. Claims 105 and 106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goelet et al. (WO 92/15712) in view of Beutler (US Patent 5,266,459), Seidman et al. (US Patent 5,429,923) and Ainsworth et al. (*Human Genetics*, (1993) Vol. 91, 15-156) ~~of~~ as applied to claims 94-104 and 107 above, and further in view of Blum et al. (*Proceedings of the National Academy of Sciences, USA*, June 1991. Vol. 88, pages 5237-5241.)

See above for the basis of the rejection as it pertains to the disclosures of Goelet et al. (WO 92/15712, Beutler (US Patent 5,266,459), Seidman et al. (US Patent 5,429,923) and Ainsworth et al. (*Human Genetics*, (1993) Vol. 91, 15-156).

Goelet et al. (WO 92/15712, Beutler (US Patent 5,266,459), Seidman et al. (US Patent 5,429,923) and Ainsworth et al. (*Human Genetics*, (1993) Vol. 91, 15-156) do not teach applying their methods to the characterization of drug responses or a patient's reaction therewith.

Blum et al., teach of the association of SNPs with a patient's response to drug therapies which in turn translates into potential drug toxicity and an increased risk of developing cancers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the procedure of Blum et al., into that of Goelet et al. (WO 92/15712, Beutler (US Patent 5,266,459), Seidman et al. (US Patent 5,429,923) and Ainsworth et al. (*Human Genetics*, (1993) Vol. 91, 15-156) so as to determine the type of interaction and response a patient will have to a drug. In view of the well developed aspect of this area of technology, and the significance such testing would have in the medical community, the ordinary

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artisan would have been highly motivated to have developed such an assay and would have had a reasonable expectation of success in so doing.

30. For the above reasons, and in the absence of convincing evidence to the contrary, the claims have not been found to be patentable over the prior art of record.

Conclusion

31. This is a Continuing Prosecution Application of applicant's earlier Application No. 08/971344. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L. Sisson whose telephone number is (703) 308-3978. The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3592 for regular communications and (703) 308-0294 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



Bradley L. Sisson
Primary Examiner
Art Unit 1655

BLS
October 30, 2000